updated Web 2/19/04

First Hit Fwd Refs

End of Result Set

L1: Entry 1 of 1 File: USPT Jan 28, 2003

US-PAT-NO: 6511809
DOCUMENT-IDENTIFIER: US 6511809 B2

TITLE: Method for the detection of an analyte by means of a nucleic acid reporter

DATE-ISSUED: January 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baez; Luis	West Chester	PA		
Ebersole; Richard C.	Newark	DE		
Hendrickson; Edwin R.	Hockessin	DE		
Neelkantan; Neel	Newark	DE		
Perry; Michael P.	Downington	PA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
E. I. du Pont de Nemours and Company	Wilmington	DE			02

APPL-NO: 09/ 858994 [PALM]
DATE FILED: May 16, 2001

PARENT-CASE:
This application claims the benefit of U.S. Provisional Application No. 60/211,293, filed Jun. 13, 2000.

INT-CL: [07] C12 Q 1/68, C12 P 19/34

US-CL-ISSUED: 435/6; 435/91.1, 435/91.2, 435/7.1
US-CL-CURRENT: 435/6; 435/7.1, 435/91.1, 435/91.2

FIELD-OF-SEARCH: 435/6, 435/91.1, 435/91.2, 435/7.1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected | Search ALL | Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4668621	May 1987	Doellgast	
☐	4882269	November 1989	Schneider et al.	
☐	5424413	June 1995	Hogan et al.	536/24.31

☐	5648213	July 1997	Reddy et al.	435/6
☑	5665539	September 1997	Sano et al.	
☐	5985548	November 1999	Collier et al.	435/6
☐	6117631	September 2000	Nilsen	435/6

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 93/15229	August 1993	WO	

OTHER PUBLICATIONS

D. L. Bates, Trends in Biotechnology, 5(7), 204 (1987).
Vary et al., Clin. Chem., 32, 1696 (1986).
Bobrow et al., J. of Immunol. Methods, 125, 279 (1989).
Bobo et al., Journal of Clinical Microbiol. vol. 28, pp 1968. 1990.
Vogt et al., J. of Immunological Methods, 101, 43 (1987).
Graves, J. of Immunological Methods, 111, 167, (1988).
Wedege et al., J. of Immunological Methods, 88, 233 (1986).
Bodmer et al., J. of Immunoassay, 11, 139, (1990).
Pruslin et al., J. of Immunological Methods, 137, 27, (1991).
Baldo et al., J. of Biochem. and Biophys. Methods, 12, 271, (1986).
Hauri et al., Analytical Biochemistry, 159, 386 (1986).
Rodda et al., Immunological Investigations, 23, 421, (1994).
Tovey et al., Elctrophoresis, 10, 243 (1989).
Kenney et al., Isreal Journal of Medical Sciences, 23, 732, (1987).
Hashida et al., Analytical Letters18, 1143, (1985).
Ruan et al., Ann Clin Biochem, 23, 54, (1985).
WO 89/03891, May 5, 1989, Chiron Corporation, Appl. No. PCT/US88/03644.
European Patent Application No. EO 204 510 A2. Filed May 29, 1986, Amoco Corporation.

ART-UNIT: 1637

PRIMARY-EXAMINER: Horlick; Kenneth R.

ABSTRACT:

A process is disclosed for the detection of an analyte utilizing a nucleic acid label as a reporter. The analyte is detected by the binding of at least two reporter reporter conjugates, each conjugate comprising a member of a binding pair and a nucleic acid label. The binding of the reporter conjugates to the analyte facilitates the juxtaposition of the nucleic acid labels, forming a single nucleic acid amplicon. The amplicon may then be detected directly, or may be used as a template of the generation of amplification products. Detection of the analyte by this process significantly reduces assay background caused by non-specific reporter conjugate binding.

26 Claims, 9 Drawing figures

West updated search 2/19/04 JSF

First Hit Fwd Refs

End of Result Set

Generate Collection Print

L1: Entry 1 of 1 File: USPT Jan 28, 2003

US-PAT-NO: 6511809
DOCUMENT-IDENTIFIER: US 6511809 B2

TITLE: Method for the detection of an analyte by means of a nucleic acid reporter

DATE-ISSUED: January 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Baez; Luis	West Chester	PA		
Ebersole; Richard C.	Newark	DE		
Hendrickson; Edwin R.	Hockessin	DE		
Neelkantan; Neel	Newark	DE		
Perry; Michael P.	Downington	PA		

US-CL-CURRENT: 435/6; 435/7.1, 435/91.1, 435/91.2

CLAIMS:

What is claimed is:

1. A method for the detection of a non-nucleic acid analyte comprising: (i) contacting at least one non-nucleic acid analyte having at least two reporter conjugate binding sites with at least two reporter conjugates, said reporter conjugates each comprising: a) one member of a binding pair having specificity for at least one reporter conjugate binding site on said analyte; b) a nucleic acid label; wherein said analyte binds to said reporter conjugate forming an analyte dependent reporter complex; (ii) contacting said analyte dependent reporter complex with a enzyme composition wherein the nucleic acid labels on said reporter conjugates are joined to form an analyte specific amplicon; (iii) contacting the analyte dependent amplicon with an replication composition wherein amplification products are produced; and (iv) detecting said amplification products.

2. A method according to claim 1 wherein said non-nucleic acid analyte at step (i) is optionally immobilized on a solid support.

3. A method according to claim 1 wherein said enzyme composition comprises a DNA polymerase and wherein said nucleic acid labels on said reporter conjugates are joined by an overlap at each 3' end.

4. A method according to claim 1 wherein said enzyme composition comprises a DNA ligase and wherein said nucleic acid labels on said reporter conjugates are enzymatically joined by means of a ligation linker comprising a replication inhibitory moiety.

5. A method according to claim 3 wherein said overlap comprises from about 10 bases to about 30 bases.

6. A method according to claim 2 wherein said solid support is comprised of materials selected from the group consisting of polyethylene, polypropylene, poly(4-methylbutene), polystyrene, polymethacrylate, poly(ethylene terephthalate), nylon, poly(vinyl butyrate), glass, ceramics, metal and metal oxides.

7. A method according to claim 1 wherein said one member of a binding pair is selected from the group consisting of an antigen, antibody, hapten, nucleic acid, a nucleic acid aptamer, biotin, streptavidin, avidin, folic acid, folate binding protein, protein A protein G, immunoglobulins, epoxide, malaimide and sulfhydryl reactive groups.

8. A method according to claim 1 wherein the at least two reporter conjugates have different specificities for different reporter conjugate binding sites on said analyte.

9. A method according to claim 1 wherein said nucleic acid labels are of different lengths.

10. A method according to claim 1 wherein said nucleic acid labels are of different nucleotide sequence.

11. A method according to claim 1 wherein said nucleic acid labels are from about 30 bases to about 1000 bases in length.

12. A method for the detection of a non-nucleic acid analyte comprising: (i) immobilizing at least one non-nucleic acid analyte on a solid support, said analyte having at least two reporter conjugate binding sites; (ii) contacting said analyte with at least one reporter conjugate pair, said reporter conjugate pair comprising a first reporter conjugate and a second reporter conjugate, each of said first and second reporter conjugates further comprising: a) one member of a binding pair having an affinity for at least one reporter conjugate biding site on said analyte; b) a nucleic acid label; wherein said nucleic acid label of said first reporter conjugate comprises a 3' hydroxyl group and wherein said nucleic acid label of said second reporter conjugate comprises a 5' phosphoryl group and wherein said analyte binds to said reporter conjugate forming an analyte dependent reporter complex; (iii) contacting said analyte dependent reporter complex with a DNA ligase, wherein said first and second nucleic acid labels are ligated to form an analyte specific amplicon; (iv) contacting said analyte specific amplicon with a replication composition wherein said amplicon is amplified forming amplification products; and (v) detecting said amplification products.

13. A method according to claim 12 wherein at step (iii) a ligation linker comprising a 3' replication inhibitory moiety is optionally added together with said DNA ligase.

14. A method according to claim 13 wherein said replication inhibitory moiety is selected from the group consisting of dideoxynuleotides, a sequence of mismatched nucleotides, 3' phosphate and cordycepin.

15. A method according to claim 12 wherein said solid support is comprised of materials selected from the group consisting of polyethylene, polypropylene, poly(4-methylbutene), polystyrene, polymethacrylate, poly(ethylene terephthalate), nylon, poly(vinyl butyrate), glass, ceramics, metal and metal oxides.

16. A method according to claim 12 wherein said one member of a binding pair is selected from the group consisting of an antigen, antibody, hapten, nucleic acid, a nucleic acid aptamer, biotin, streptavidin, avidin, folic acid, folate binding protein, protein A protein G, immunoglobulins, epoxide, malaimide and sulfhydryl reactive groups.

17. A method according to claim 12 wherein the at least two reporter conjugates have different specificities for different reporter conjugate binding sites on said analyte.

18. A method according to claim 12 wherein said nucleic acid labels are of different lengths.

19. A method according to claim 12 wherein said nucleic acid labels are of different nucleotide sequence.

20. A method according to claim 12 wherein said nucleic acid labels are from about 25 bases to about 1000 bases in length.

21. A method for the detection of a non-nucleic acid analyte comprising: (i) contacting at least one non-nucleic acid analyte with at least one reporter conjugate pair, said reporter conjugate pair comprising a first reporter conjugate and a second reporter conjugate, each of said first and second reported conjugates further comprising: a) one member of a binding pair having an affinity for at least one reporter conjugate biding site on said analyte; b) a nucleic acid label; wherein said nucleic acid label of said first reporter conjugate comprises a 3' hydroxyl group and wherein said nucleic acid label of said second reporter conjugate comprises a 5' phosphoryl group and wherein said analyte binds to said reporter conjugate forming an analyte dependent reporter complex; (ii) contacting said analyte dependent reporter complex with a DNA ligase; wherein said first and second nucleic acid labels are ligated to form an analyte dependent amplicon; (iii) contacting said analyte specific amplicon with a replication composition wherein said amplicon is amplified forming amplification products; and (iv) detecting said amplification products.

22. A method for the detection of a non-nucleic acid analyte comprising: (i) contacting at least one non-nucleic acid analyte having at least two reporter conjugate binding sites with at least two reporter conjugates, said reporter conjugates each comprising: a) one member of a binding pair having specificity for at least one reporter conjugate binding site on said analyte; b) a nucleic acid label; wherein said analyte binds to said reporter conjugates forming an analyte dependent reporter complex; (ii) contacting said analyte dependent reporter complex with; a) an enzyme composition; and b) a nucleic acid reporting label selected from the group consisting of fluorescent moieties, chemiluminescent moieties, particles, enzymes, radioactive tags, light emitting moieties and intercalating dyes; wherein the nucleic acid labels on said reporter conjugates are joined to form an analyte specific amplicon and wherein said nucleic acid reporting label is incorporated into said amplicon; and (iii) detecting said labeled amplicon.

23. A method according to claim 22 wherein said enzyme composition comprises a DNA polymerase and wherein said nucleic acid labels on said reporter conjugates are joined by an overlap at each 3' end.

24. A method according to claim 22 wherein said enzyme composition comprises a DNA ligase and wherein said nucleic acid labels on said reporter conjugates are enzymatically joined by means of a ligation linker comprising a replication inhibitory moiety.

25. A method according to claim 22 wherein said non-nucleic acid analyte of step (i) is optionally immobilized on a solid support.

26. A method for the detection of a nucleic acid analyte comprising: (i) contacting at least one nucleic analyte having at least two reporter conjugate binding sites with at least two reporter conjugates, said reporter conjugates each comprising: a) one member of a binding pair having specificity for at least one reporter conjugate binding site on said analyte, the one member of a binding pair selected from the group consisting of an antigen, antibody, biotin, streptavidin, avidin, folic acid, folate binding protein, protein A protein G, immunolobulins, epoxide, malaimide and sulfhydryl reactive groups; b) a nucleic acid label; wherein said analyte binds to said reporter conjugates forming an analyte dependent reporter complex; (ii) contacting said analyte dependent reporter complex with a enzyme composition wherein the nucleic acid labels on said reporter conjugates are joined to form an analyte specific amplicon; (iii) contacting the analyte specific amplicon with an replication composition wherein amplification products are produced; and (iv) detecting said amplification products.

Generate Collection | Print

Search Results - Record(s) 1 through 1 of 1 returned.

☐ 1. 6511809. 16 May 01; 28 Jan 03. Method for the detection of an analyte by means of a nucleic acid reporter. Baez; Luis, et al. 435/6; 435/7.1 435/91.1 435/91.2. C12Q001/68 C12P019/34.

Generate Collection | Print

Terms	Documents
6511809.pn.	1

Prev Page Next Page Go to Doc#